

GEOTECHNICAL TECHNICAL MEMORANDUM

Florida Department of Transportation

District 1

SR 70

Limits of Project: from Lorraine Road to CR 675/Waterbury Road

Manatee County, Florida

Financial Management Number: 414506-2

ETDM Number: 14263

Date: MARCH 2019

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

GEOTECHNICAL TECHNICAL MEMORANDUM

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT ONE SR 70

**From Lorraine Road to CR 675/Waterbury Road
Manatee County, Florida**

Financial Project ID: 414506-2-22-01
ETDM No.: 14263

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Prepared by:

Tierra, Inc.
Tampa, Florida

Prepared for:

Kisinger, Campo & Associates
Tampa, Florida

MARCH 2019

May 25, 2017

Kisinger, Campo & Associates, Corp.
201 North Franklin Street, Suite 400
Tampa, Florida 33602

Attn: Mr. Mark Easley

**RE: Geotechnical Technical Memorandum
Project Development and Environment (PD&E) Soil Survey Study
SR 70 from Lorraine Road to CR 675 (Waterbury Road)
Manatee County, Florida
FPN: 414506-2-22-01
Tierra Project No. 6511-16-131**

Mr. Easley:

Tierra, Inc. (Tierra) has completed Geotechnical Engineering Services for the referenced project. The results of the study are enclosed herein.

Tierra appreciates the opportunity to provide our services to Kisinger, Campo and Associates Corp. (KCA) and the Florida Department of Transportation (FDOT) on this project. If you have any questions regarding this report, please contact us at (813) 989-1354.

Respectfully Submitted,

TIERRA, INC.



Susan E. Fries, E.I.
Geotechnical Engineer Intern



Erick M. Frederick, P.E.
Senior Geotechnical Engineer
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Attachment: USDA Soil Survey

Section 1.0 Introduction

1.1 Project Description

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to evaluate the proposed widening of 6.1 miles of State Road (SR) 70 from Lorraine Road (MP 9.478) to County Road (CR) 675/Waterbury Road (MP 15.567) in Manatee County, as depicted in **Figure 1-1**.

This study evaluates the need for capacity improvements and provides engineering and environmental documentation and analysis to establish the optimal type and location of improvements to SR 70. The results of the study will aid Manatee County, FDOT and the FDOT Office of Environmental Management (OEM) in determining the type, preliminary design and location of the proposed improvements.

The project was evaluated through FDOT's Efficient Transportation Decision Making (ETDM) process as project #14263. An ETDM *Programming Screen Summary Report* containing comments from the Environmental Technical Advisory Team (ETAT) was published on April 3, 2018. The ETAT evaluated the project's effects on natural, physical, cultural, social and economic resources.

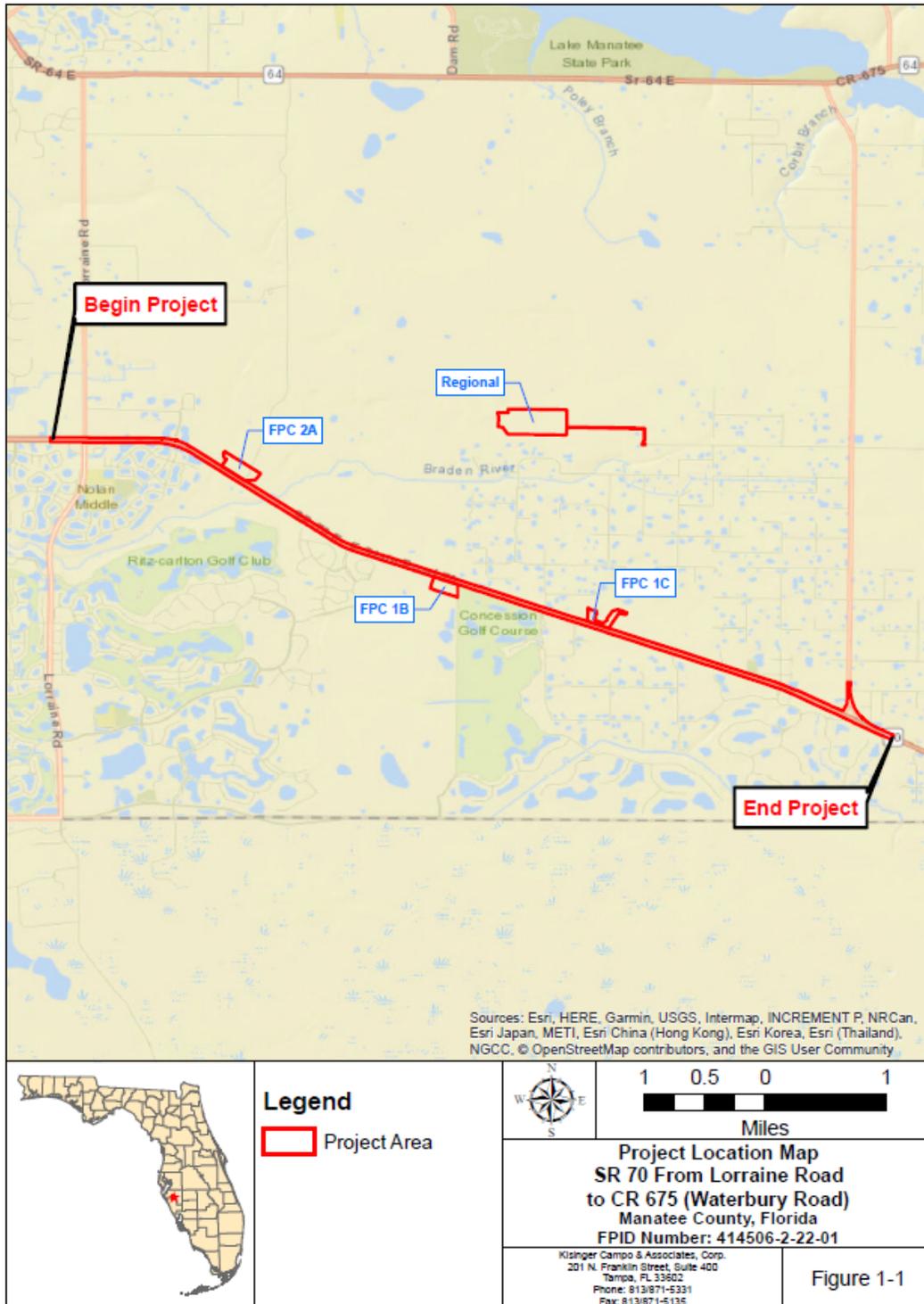
Upon completion, this study will meet all requirement of the National Environmental Policy Act of 1969 (NEPA) as administered by the Florida Department of Transportation – Office of Environmental Management (OEM) and the requirements of other federal and state laws so as to qualify the proposed project for federal-aid funding.

1.2 Purpose and Need

The purpose of this project is to improve traffic operational conditions along the SR 70 corridor from Lorraine Road to CR 675/Waterbury Road to accommodate projected travel demand, specifically increased commuter and freight traffic. Traffic flow within the corridor is of particular concern given the high percentage of heavy trucks mixed with non-truck traffic. The unique acceleration and deceleration characteristics of the trucks cause vehicular travel delay and, ultimately, impact the movement of commuter and freight traffic on the two-lane undivided roadway.

Two Developments of Regional Impact (Cypress Banks and Northwest Sector) surround the western project terminus. Of the five Planned Unit Developments that are present, two are located at the western project terminus and three surround the eastern portion of the project corridor (two of these three are Panther Trace and Concession). Del Webb Lakewood Ranch is also present south of SR 70 near Uihlein Road. The corridor further abuts a master planned community, Lakewood Ranch, to the

Figure 1-1 Project Location Map



west. Lakewood Ranch is also identified by Manatee County as one of four major growth and focus areas of the county. Growth along the project corridor is anticipated to occur most heavily within the area surrounding the western half of the corridor as the area will continue to support residential and mixed use community activities with commercial uses concentrated at the intersection of SR 70 and Lorraine Road.

Due to the fact that it provides regional access to agriculture and ranching operations, industrial/commercial areas, and freight distribution facilities throughout central Florida, particularly with its connections to several major transportation facilities, SR 70 has been designated as part of the SIS network. Accordingly, the project segment of SR 70 currently carries significant truck traffic.

This project is anticipated to improve traffic operations and preserve operational capacity along SR 70 to address increased travel demand as a result of projected growth along the corridor and higher volumes of heavy trucks on the corridor due to agricultural and ranching activities in the area. The proposed project is also anticipated to improve safety characteristics of the facility, which are particularly exacerbated by the high truck percentages, by enhancing overall traffic operations.

1.3 Purpose of Report

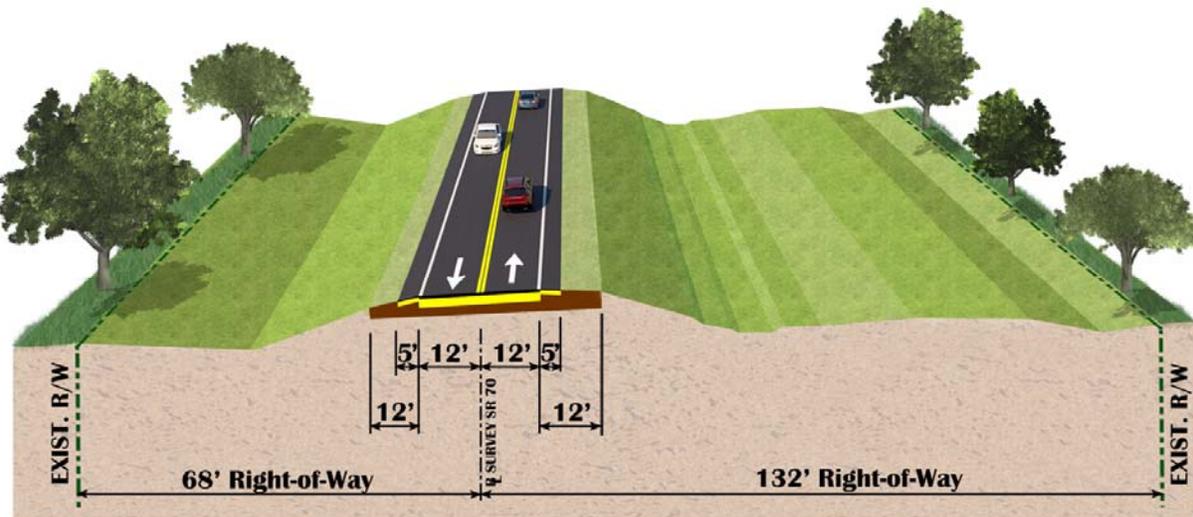
This Geotechnical Technical Memorandum has been prepared as part of the PD&E study for the project to present the findings from a review of the Manatee County Soil Survey, published by the United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS). A geotechnical field investigation was not part of the PD&E project scope for this project.

Section 2.0 Project Description

2.1 Existing Facility

Throughout the limits of this study SR 70 is designated as a rural principal arterial highway, a SIS highway and an evacuation route. As defined by the FDOT Design Manual, Section 200, the context classification of the project is C3R – Suburban Residential. The existing SR 70 facility consists of a two-lane undivided facility with 12-foot travel lanes (one in each direction) and 12-foot shoulders (5 feet paved) (**Figure 2-1**). Within the study limits the existing right-of-way width is approximately 200 feet throughout the majority of the project corridor and approximately 250 feet near the intersection of SR 70 and CR 675/Waterbury Road. There are 14 cross drains, ranging in size from 24-inch pipes to a quadruple 10' x 7' box culvert. The posted speed limit within the project area is 60 miles per hour (mph).

Figure 2-1 Existing Typical Roadway Section



2.2 Proposed Action

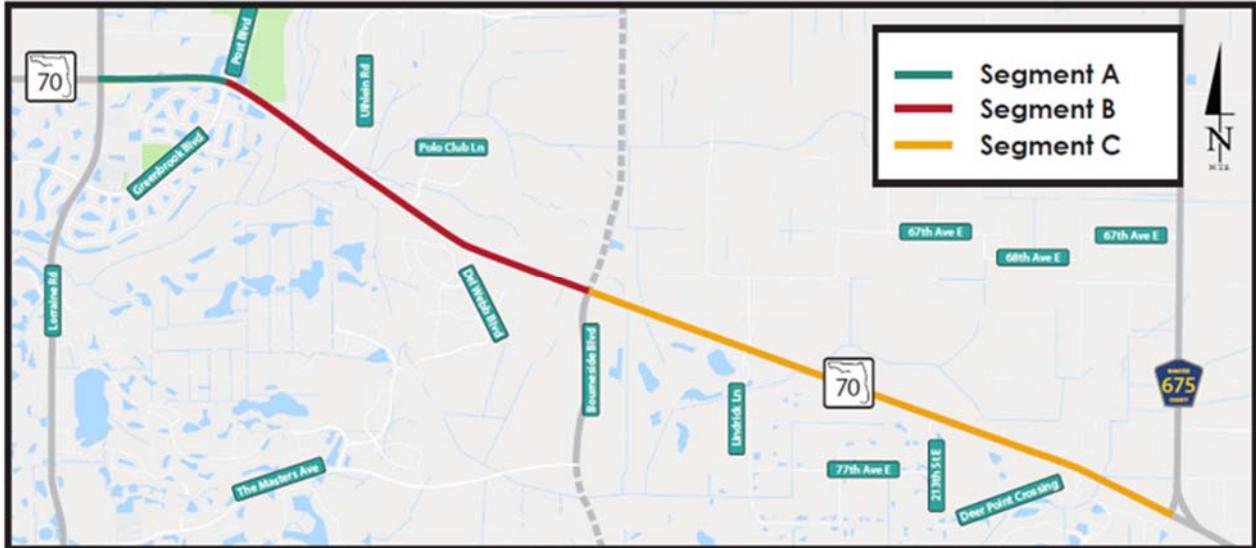
The proposed action is to increase the capacity of the existing two-lane undivided roadway by widening it to a four or six-lane divided roadway to accomplish the purpose and need described in the previous section.

2.2.1 Project Alternatives

Within the limits of this study, FDOT is evaluating one project build alternative and three project segments. The three segments are separated for analysis so this study can best address the local transportation needs. Segment A extends from Lorraine Road to east of Greenbrook Boulevard, Segment B extends from east of Greenbrook Boulevard to Bourneside Boulevard, and Segment C extends from Bourneside Boulevard to the eastern project limit at CR 675 (**Figure 2-2**).

The No-Build alternative remains a viable alternative throughout the study process.

Figure 2-2 Project Location Map by Segment



2.2.2 Typical Sections

The designation of SR 70 as a SIS facility throughout the project limits presents a key variable for the design speeds for the project. The FDOT Design Manual (FDM), Part 2 Table 201.4.1 provides design speed controls for SIS facilities. For SIS facilities with a C3R context classification a minimum design speed of 50 mph is required. However, within the C3R context classification, if curbed roadways are proposed the design speed may be reduced to 45 mph. As designed, the proposed high-speed curbed typical sections proposed for Segment A meets the FDM criteria with a 45 mph design speed. The 50 mph design speed proposed for Segments B and C meets the minimum design speed for an SIS facility.

Proposed build improvements for each of the three project segments include the follows:

Segment A

The proposed typical section for Segment A will provide a high-speed curbed roadway design with three 11-foot travel lanes in each direction, 7.0-foot paved outside shoulders (buffered bike lanes), a closed drainage system with curbs and gutters, and 8-foot sidewalks in both directions (**Figure 2-3**). The proposed improvements in this segment are anticipated to be accomplished within the existing 200-foot right-of-way.

Segment B

The proposed typical section for Segment B will provide a high-speed curbed roadway design with two 12-foot lanes in each direction, 5.0-foot paved outside shoulders, a closed drainage system with curbs and gutters, and 8-foot sidewalks in both directions (**Figure 2-4**). The proposed roadway has been designed with a 54-foot wide median such that it is expandable to a six-lane section in the future, when traffic needs merit an expansion, by adding a 12-foot lane in each direction on the inside. The proposed improvements in this segment are anticipated to be accomplished primarily within the existing 200-foot right-of-way; minimal right-of-way will be needed to construct proposed roundabouts at Uihlein Road, Del Webb Boulevard, and Bournside Boulevard.

Segment C

The proposed typical section for Segment C will provide a high-speed curbed roadway design with two 12-foot lanes in each direction, 10-foot outside shoulders (5 feet paved), an open drainage system, and 8-foot sidewalks in both directions (**Figure 2-5**). The proposed improvements in this segment are anticipated to be accomplished primarily within the existing 200-foot right-of-way; minimal right-of-way will be needed to construct proposed roundabouts at 197th Street East/Lindrick Lane, 213th Street East, 225th Street East/Panther Ridge Trail, and CR 675.

Figure 2-3 Segment A Proposed Typical Roadway Section

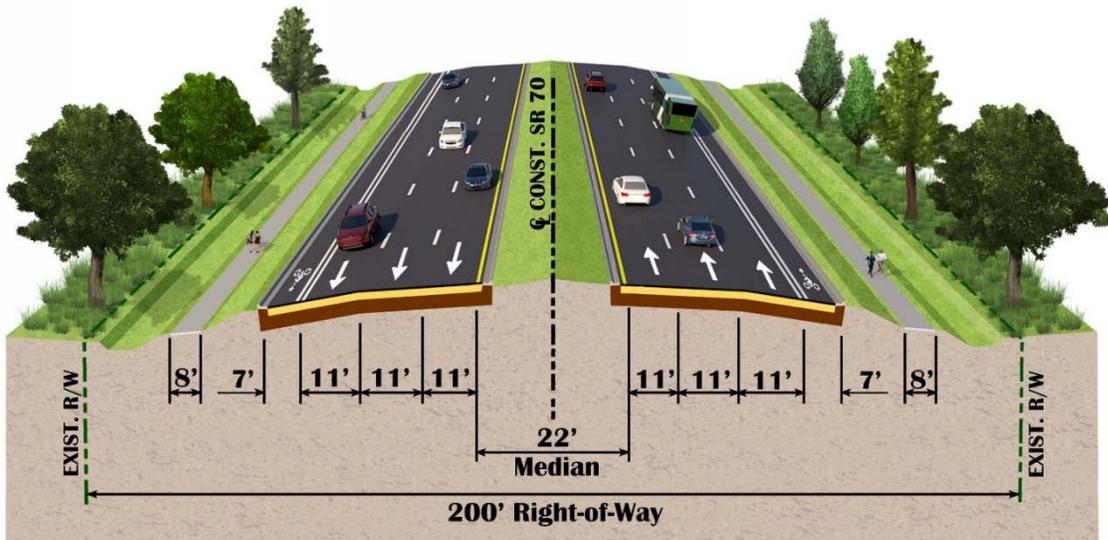


Figure 2-4 Segment B Proposed Typical Roadway Section

***Future Widening**

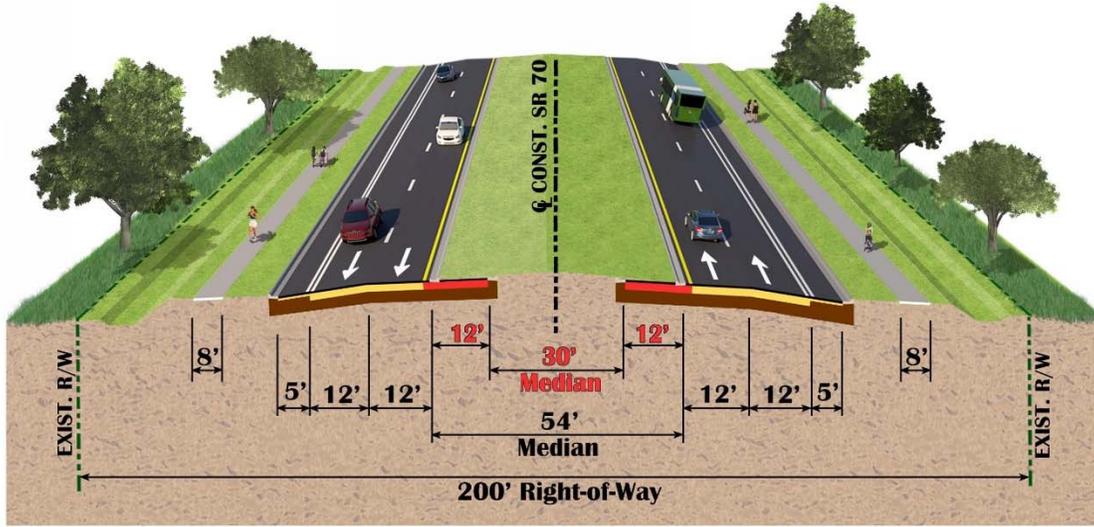
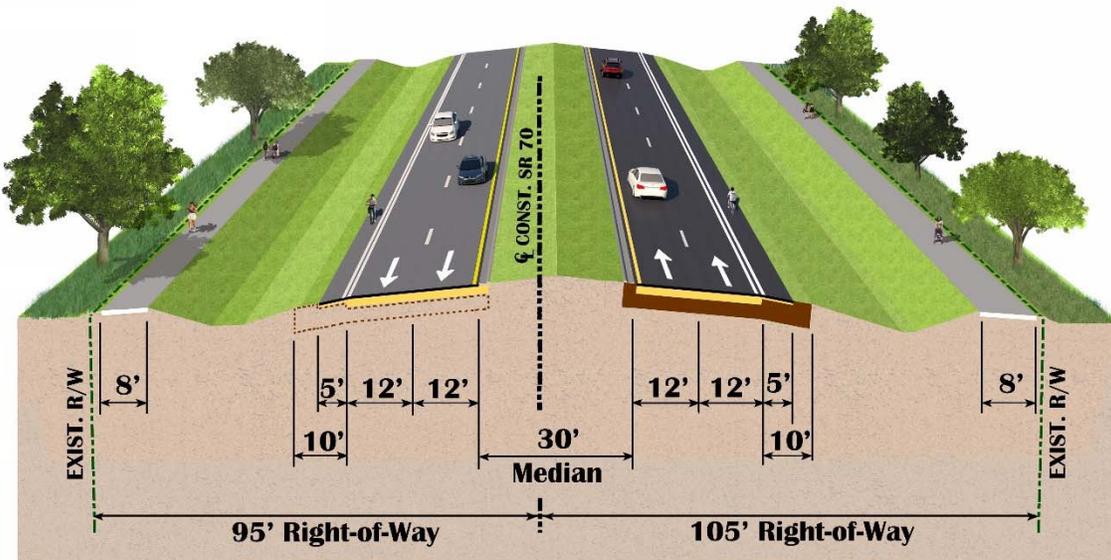


Figure 2-5 Segment C Proposed Typical Roadway Section



Section 3.0 Scope of Services

The purpose of the geotechnical portion of the PD&E study is to obtain information on the existing subsurface conditions along the project alignment to assist in the preparation of the PD&E Report for the project. The following services were provided to achieve the preceding objective:

- Reviewed published soils information. This published information was obtained from the Web Soil Survey of Manatee County, Florida published by the United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS).
- Prepared this Geotechnical Technical Memorandum for the project.

Section 4.0 Subsurface Conditions

4.1 Manatee County Soil Survey

Based on a review of the Manatee County Soil Survey published by the USDA-NRCS, it appears that there are five (5) soil-mapping units noted within the project limits. A detailed soil survey map is shown on the **USDA Soil Survey** in the attachments. The general soil descriptions are presented in the sub-sections below, as described in the Web Soil Survey.

4.1.1 Cassia Fine Sand (Unit 11)

The Cassia component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during January, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 1 percent.

4.1.2 Floridana-Immokalee-Okeelanta Association (Unit 26)

The Floridana, depressional component makes up 35 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 10 percent.

The Immokalee component makes up 30 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, and December. Organic matter content in the surface horizon is about 2 percent.

The Okeelanta component makes up 20 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches

during June, July, August, September, and October. Organic matter content in the surface horizon is about 80 percent.

4.1.3 Myakka Fine Sand, 0 to 2 Percent Slopes (Unit 30)

The Myakka, non-hydric component makes up 60 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, and November. Organic matter content in the surface horizon is about 2 percent.

The Myakka, hydric component makes up 25 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, and November. Organic matter content in the surface horizon is about 2 percent.

4.1.4 Palmetto Sand (Unit 38)

The Palmetto component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainage ways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, and November. Organic matter content in the surface horizon is about 2 percent.

4.1.5 Pinellas Fine Sand (Unit 40)

The Pinellas, non-hydric component makes up 70 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, and November. Organic matter content in the surface horizon is about 2 percent.

The Pinellas, hydric component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and

loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, and November. Organic matter content in the surface horizon is about 2 percent.

4.2 General Soil Properties

Additional information regarding the soils and groundwater conditions for the above soil mapping units was obtained from the Manatee County Soil Survey published by USDA-NRCS and the Web Soil Survey and is presented in Tables 3-1 and 3-2 as follows:

Table 4-1 Manatee County USDA NRCS Soil Survey Information

Map No.	Soil Name	Hydrologic Soil Group	Depth to High Water Table (ft)	Typical Soil Types (Profile from Ground Surface to depth of approximately 80 inches)
11	Cassia Fine Sand	C	1.5 - 3.5	Fine Sand to Loamy Sand
26	Floridana-Immokalee-Okeelanta	D	0.0	Fine Sand to Sandy Clay Loam
30	Myakka Fine Sand	B/D	0.0 – 1.5	Fine Sand to Loamy Fine Sand
38	Palmetto Sand	B/D	0.0	Fine Sand to Sandy Clay Loam
40	Pinellas Fine Sand	B/D	0.0 – 1.5	Fine Sand to Sandy Clay Loam

Table 4-2 Manatee County USDA NRCS Soil Survey Information

USDA Map Symbol and Soil Name	Soil Classification			
	Depth (in)	USCS	AASHTO	Permeability (in/hr)
(11) Cassia	0-3	SP, SP-SM	A-3	6.0 - 20.0
	3-24	SP, SP-SM	A-3	6.0 - 20.0
	24-33	SM, SP-SM	A-2-4, A-3	0.6 - 6.0
	33-80	SP, SP-SM	A-3	6.0 - 20.0
(26) Floridana, depressional - Immokalee- Okeelanta	0-19	SM, SP-SM	A-2-4, A-3	6.0 - 20.0
	19-36	SP, SP-SM	A-3	6.0 - 20.0
	36-63	SC, SC-SM	A-2-4, A-2-6	0.1 - 0.2
	63-80	SM, SP-SM	A-2-4, A-3	6.0 - 20.0
	0-10	SP, SP-SM	A-3	6.0 - 20.0
	10-34	SP, SP-SM	A-3	6.0 - 20.0
	34-43	SM, SP-SM	A-2-4, A-3	0.6 - 2.0
	43-80	SP, SP-SM	A-3	6.0 - 20.0
	0-20	PT	A-8	6.0 - 20.0
20-54	SM, SP, SP-SM	A-2-4, A-3	6.0 - 20.0	

Table 4-2 (Continued) Manatee County USDA NRCS Soil Survey Information

USDA Map Symbol and Soil Name	Soil Classification			
	Depth (in)	USCS	AASHTO	Permeability (in/hr)
(30) Myakka, non-hydric - Myakka, hydric	0-5	SP, SP-SM	A-3	6.0 - 20.0
	5-23	SP, SP-SM	A-3	6.0 - 20.0
	23-37	SM, SP-SM	A-2-4, A-3	0.6 - 6.0
	37-61	SP, SP-SM	A-3	6.0 - 20.0
	61-75	SM, SP-SM	A-2-4, A-3	0.6 - 6.0
	0-5	SP, SP-SM	A-3	6.0 - 20.0
	5-23	SP, SP-SM	A-3	6.0 - 20.0
	23-37	SM, SP-SM	A-2-4, A-3	0.6 - 6.0
	37-61	SP, SP-SM	A-3	6.0 - 20.0
	61-75	SM, SP-SM	A-2-4, A-3	0.6 - 6.0
(38) Palmetto	0-8	SP, SP-SM	A-2-4, A-3	6.0 - 20.0
	8-25	SP, SP-SM	A-2-4, A-3	6.0 - 20.0
	25-45	SP-SM	A-2-4, A-3	6.0 - 20.0
	45-64	SC, SC-SM, SM	A-2-4, A-2-6	0.2 - 0.6
	64-68	SM, SP-SM	A-2-4, A-3	2.0 - 6.0
(40) Pinellas, non-hydric - Pinellas, hydric	0-5	SP	A-3	6.0 - 20.0
	5-11	SP	A-3	6.0 - 20.0
	11-33	SP-SM	A-2-4, A-3	6.0 - 20.0
	33-45	SC, SC-SM	A-2-4, A-2-6	0.6 - 2.0
	45-60	SP, SP-SM	A-2-4, A-3	6.0 - 20.0
	0-5	SP	A-3	6.0 - 20.0
	5-11	SP	A-3	6.0 - 20.0
	11-33	SP-SM	A-2-4, A-3	6.0 - 20.0
	33-45	SC, SC-SM	A-2-4, A-2-6	0.6 - 2.0
	45-60	SP, SP-SM	A-2-4, A-3	6.0 - 20.0

4.3 Groundwater Conditions

According to the USDA-NRSC Soil Survey, much of the project corridor consists of somewhat poorly to very poorly drained soils. Ponds and wetlands exist along the project corridor. The seasonal high groundwater table is at or near the ground surface throughout much of the corridor.

Along most of the project corridor, the Seasonal High Groundwater Table (SHGWT) levels in their natural condition are estimated to be above the natural ground surface to within 3½ feet of the natural ground surface.

Section 5.0 Preliminary Evaluations

5.1 General

Based upon the USDA-NRCS Soil Survey for Manatee County, sandy soils and clayey sands are reported along the majority of the project corridor to depths of 80 inches below the natural ground surface. However, Floridana Depressional-Immokalee-Okeelanta soils are also reported throughout the project corridor. These soils may be organic in nature and considered unsuitable. In general, the sandy soils are suitable for supporting proposed roadway embankments after proper subgrade preparation and removal of unsuitable materials.

Areas along the project corridor where clay, muck and/or groundwater conditions may impact the project are detailed below.

5.1.1 Shallow Groundwater

The Seasonal High Groundwater Table (SHGWT) for the soil units presented above is reported to range from at or above the predevelopment natural grade to a depth of 3½ feet below the predevelopment natural grade within the project limits.

Roadway base to groundwater clearance will need to be evaluated to ensure minimum separation between the base and the SHGWT is maintained or to determine if additional measures are required (ie, blackbase, underdrains, etc.). In areas where the existing SHGWT is above grade, the SHWGT will have to be established by the project biologist utilizing biological indicators.

5.1.2 Near Surface Clayey Soils

The following soil mapping units noted plastic/clayey soils (A-2-6) at depths ranging from approximately 33 to 63 inches below natural grades:

- Floridana Depressional-Immokalee-Okeelanta (Unit 26)
- Palmetto Sand (Unit 38)
- Pinellas Fine Sand (Unit 40)
- Plastic soils have limitations related to base clearance and are also poorly drained. Separation between plastic clayey soils and the roadway pavement sections should be in accordance with FDOT Standard Indices 500 and 505. As the project progresses beyond the PD&E stage, additional geotechnical services should be performed to determine the impact these materials will have to the proposed design.

5.1.3 Organic Soils

Organic soils were in small pockets at various places along the project alignment according to the USDA Soil Survey. The following soil mapping unit noted organic/muck (A-8) soils within approximately 0 to 20 inches below the ground surface at various locations throughout the project alignment:

- Floridana Depressional-Immokalee-Okeelanta (Unit 26)

Organic/muck (A-8) soil, if encountered during construction, should be removed in accordance with FDOT Standard Index 500 and replaced with backfill in accordance with Index 505. As the project progresses beyond the PD&E phase, delineation of the locations identified by the USDA Soil Survey as potentially containing organic soils will be required to determine the impact of the organic soils on the proposed design. Additional geotechnical services should be performed to identify the vertical and horizontal limits of the organic soils within the project limits.

5.2 Roadway Construction

Site preparation should consist of normal clearing and grubbing followed by compaction of subgrade soils. Subgrade preparation should include the removal of plastic soils, top-soils and organic soils in accordance with FDOT Design Standard Index 500. Backfill embankment materials should consist of materials conforming to FDOT Design Standard Index 505. Clearing and grubbing and compaction should be accomplished in accordance with the latest FDOT Standard Specifications.

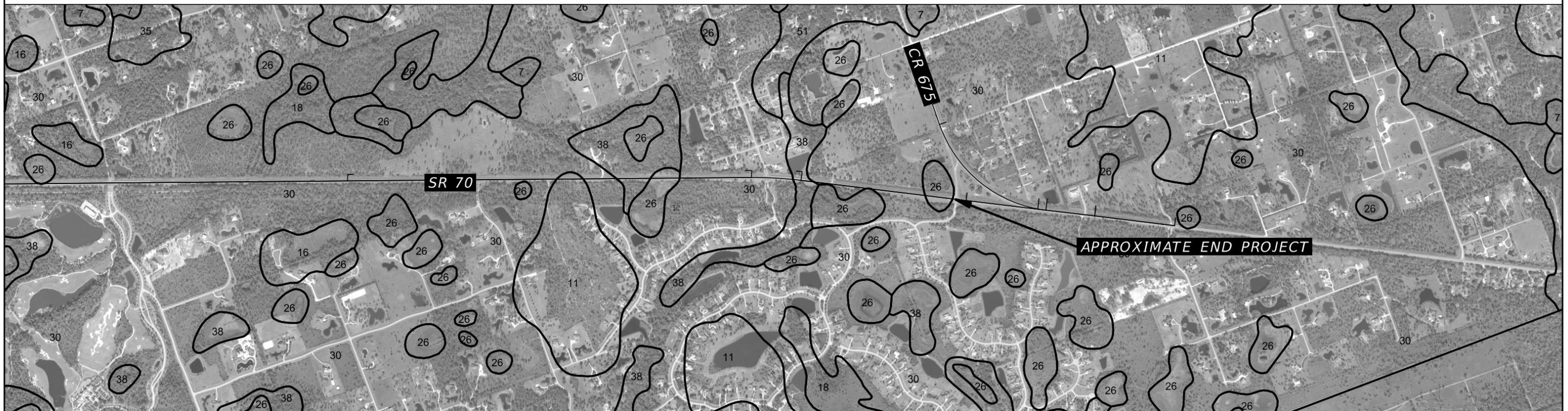
The overall site preparation and mechanical densification work for the construction of the proposed roadway improvements should be in accordance with the FDOT Standard Specifications and Standard Index requirements. In general, the existing subsurface soils appear capable of supporting the construction of the proposed roadway improvements subject to the above geotechnical considerations and after proper subgrade preparation.

Section 6.0 Limitations

Our professional services have been performed, our findings obtained and our preliminary evaluations prepared in accordance with generally accepted geotechnical engineering principles and practices at the time of this report. Tierra is not responsible for the conclusions, opinions or recommendations made by others based on this data.

The scope of the geotechnical portion of the PD&E study is to provide information on the existing subsurface conditions along the project alignment based on a review of the Manatee County Soil Survey published by the USDA-NRCS to assist in the preparation of the PD&E Report for the project. The preliminary evaluations submitted in this report are based upon the data obtained from the published information. Should subsoil variations become evident during the course of this project, a re-evaluation will be necessary after we have had an opportunity to observe the characteristics of the condition encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed roadway construction.

The scope of our services does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of Kisinger, Campo & Associates, Corp. and the FDOT.



REFERENCE: USDA SOIL SURVEY OF MANATEE COUNTY, FLORIDA

TOWNSHIP: 35S
 RANGE: 19E & 20E
 SECTION: 14,15,22,23,24,25,28,29,30

REVISIONS				ERICK M. FREDERICK, P.E. P.E. LICENSE NUMBER 63920 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637 CERTIFICATE OF AUTHORIZATION NO. 6486	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			USDA SOIL SURVEY	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 70	MANATEE	414506-2-52-01		